



RECORD OF EMAIL

Albert P. Nixon
Senior Aviation Accident Investigator
Western Pacific Region

Date: February 11, 2020
Person Contacted: Stephen Parrent (Long Beach FAA FSDO)
NTSB Accident Number: WPR19FA262

Narrative:

On an email from Stephen Parrent, the following is a summary of what was stated:

- Scott Darden, the passenger in the airplane was interviewed by the FAA on November 1, 2019.
- He had no recollection of the accident nor of the previous flight.
- He did recall details prior to takeoff.
- He was not present to observe the preflight inspection.
- He estimated the weight of the radar imaging equipment to be about 50 pounds.
- He was seated directly behind the pilot.
- The 12-volt batteries were positioned in the aft cargo compartment.
- He estimated his body weight to be about 175 pounds.
- He did not notice anything out of the ordinary regarding the pilot's disposition.
- He said they were in line about 15 minutes prior to takeoff.
- He said his headset was not working.
- He did not know of anyone accomplishing maintenance to the airplane on the day of the accident.
- He did not recall the actual takeoff or subsequent accident.



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Date: March 19, 2021
Person Contacted: Dr. Michelle Watters (NTSB Medical Officer, MD, PhD, MPH)
NTSB Accident Number: WPR19FA262

Narrative:

On an email from Dr. Michelle Watters, the following is a summary of what was stated:

You asked us to review this case (WPR19FA262 Torrance, CA) because of the pilot's toxicology findings.

- I reviewed the Federal Aviation Administration (FAA) medical case review, the pilot's autopsy, and FAA Forensic Sciences Laboratory toxicology^[1] reports. I also reviewed relevant medical information.

Reports provided

According to the FAA medical case review, the 77-year-old male pilot held a second-class special issuance medical certificate with the limitation that he must wear corrective lenses. His most recent FAA medical certification exam was on 3/29/19 and at that time he reported he had accrued 7,845 total flight hours. He was 73 inches tall and weighed 227 pounds. He reported taking OcuVite, an over the counter vitamin supplement for eye health. The pilot had a special issuance for visual field defects. His corrected distant vision was 20/200 in his right eye and 20/20 in his left eye; corrected intermediate vision was 20/100 in his right eye and 20/40 in his left eye; corrected near vision was 20/200 in his right eye and 20/40 in his left eye. The pilot had macular degeneration which his ophthalmologist reported had been stable for over 10 years; he had a persistent upper field defect in his right eye. In 2010 he underwent a successful medical flight test to upgrade his Statement of Demonstrated Ability (SODA) from third to second class. His previous SODA had been granted in 2004. The pilot also had a remote history of treatment for lung cancer.

^[1] See <https://jag.cami.jccbi.gov/toxicology/> for a list of tested-for substances. (Updated 1/16/19)

According to the County of Los Angeles Department of Medical Examiner-Coroner autopsy report, the cause of the pilot's death was blunt force traumatic injuries and the manner of death was accident. Other than mild to moderate atherosclerosis in the coronary arteries and aorta, no significant natural disease was identified by the medical examiner.

The Department of the Medical Examiner-Coroner reported that the pilot's heart blood alcohol was negative (per conversation with the lab, their detection limit is 0.02 grams per deciliter [gm/dL]) and his drug screen was non-detect. Toxicology testing performed by the FAA Forensic Sciences Laboratory detected ethanol in his heart blood at 0.015 gm/dL, vitreous fluid at 0.055 gm/dL, and urine at 0.097 gm/dL. Methanol was reported as detected in his urine but not in his heart blood or vitreous fluid. The FAA laboratory also detected the sedating antihistamine diphenhydramine in the pilot's blood and urine.

Ethanol is a social drug commonly consumed by drinking beer, wine, or liquor. Ethanol acts as a central nervous system depressant; it impairs judgment, psychomotor functioning, and vigilance. Effects of ethanol on aviators are generally well understood; it significantly impairs pilot performance, even at very low levels.^[2] While the acute effects of ethanol can vary depending on an individual's frequency of use, body weight, and tolerance, in general, at blood ethanol concentrations as low as 0.02 gm/dL there is relaxation and some loss of judgment and at 0.05 gm/dL there is further degradation of judgment, psychomotor functioning, and alertness.^[3] FAA regulation Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft (1) within 8 hours after the consumption of any alcoholic beverage and (4) while having an alcohol concentration of 0.04 or greater in a blood or breath specimen.^[4]

Ethanol is water soluble, and after absorption it quickly and uniformly distributes throughout the body's tissues and fluids. The distribution pattern parallels water content and blood supply of the tissue. Post-absorption, the alcohol concentration in vitreous fluid and urine are larger than blood by about 12% and 25%, respectively. There is a one to two hour delay in the balance between vitreous fluid or urine and blood. Ethanol can be produced after death by microbial activity often in conjunction with other alcohols; vitreous humor, and to a lesser extent urine, does not suffer from postmortem production to any significant extent.^{[5],[6]}

Diphenhydramine is a sedating antihistamine (commonly marketed as Benadryl) and is available over the counter in many products used to treat colds, allergies, and insomnia. Product packaging for diphenhydramine includes the warning that use of the medication may impair mental and physical ability to perform potentially hazardous tasks, including driving or operating heavy

^[2] Cook, C.C.H. 1997. Alcohol and aviation. *Addiction* (Abingdon, England). 92(5):539-555.

^[3] Centers for Disease Control and Prevention. Blood Alcohol Concentration (BAC).

<https://www.cdc.gov/motorvehiclesafety/pdf/bac-a.pdf> Accessed 2/24/21

^[4] eCFR- Code of Federal Regulations. 91.17. Current as of 2/17/21. Available from: <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div8&node=14:2.0.1.3.10.1.4.9>

^[5] Canfield, DV, TC Kupiec, and EF Huffine. July 1992. Postmortem alcohol production in fatal aircraft accidents. U.S. Department of Transportation. FAA. Washington, D.C. Report # DOT/FANAM-92/24.

^[6] Ioan, BG, V Jitaru, R Damian, and SI Damian. 2015. Study on the relationship between the concentration of ethanol in the blood, urine, and vitreous humor. *Rom J. Leg Med* 23:211-216.

machinery. The therapeutic range is 0.025 to 0.100 (micrograms per milliliter (µg/mL) and it has a half-life of 3 to 14 hours.^[7] FAA provides guidance on wait times before flying after using this medication.^[8]

^[7] FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Diphenhydramine.
<https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=50>.

^[8] FAA. 11/13/19. What over-the-counter (OTC) medications can I take and still be safe to fly? OK-20-0302
https://www.faa.gov/licenses_certificates/medical_certification/media/OTCMedicationsforPilots.pdf