



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

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Chief Medical Officer

A. ACCIDENT: WPR18FA276; Silver City, ID

On September 30, 2018, about 0837 mountain daylight time, a Cessna T210M airplane, N732MV, collided with terrain approximately 4.5 miles northwest of Silver City, Idaho. The private pilot and two passengers were fatally injured. A postimpact fire ensued, and the airplane was destroyed. The airplane was registered to T and C Aircraft Corporation and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the accident site about the time of the accident and no flight plan was filed. The flight originated from Sunrise Skypark Airport (ID40), Marsing, Idaho, about 0810 and was destined for Murphy Airport (1U3), Murphy, Idaho.

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, FAA blue ribbon medical file, FAA airman file, autopsy report, toxicology findings, personal medical records, and the investigator's reports were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

FAA Medical Case Review and Blue Ribbon Medical File

According to the FAA medical case review, the 73 year old male pilot had reported 4,420 total flight hours as of his last medical exam, dated

12/1/2016. At that time, he was 73 inches tall and weighed 230 pounds. He had reported having type 2 diabetes (since 1989), high blood pressure, high cholesterol, and hypothyroidism to the FAA. At the time of his last exam, he reported using insulin and metformin to treat his diabetes, ramipril for his blood pressure, atorvastatin for his cholesterol, levothyroxine for his thyroid, and to use topical testosterone.^{1,2,3,4,5,6} These are not considered impairing. He was known to have early cataracts but was not known to have any complications of his diabetes. At the time of his last exam, he was issued a special issuance third class medical certificate limited by a requirement he have available glasses for near vision and marked, "Not valid for any class after 12/31/2017. Not valid outside the borders of the United States."

The pilot completed the BasicMed course, obtained a BasicMed physician attestation, and signed a release allowing the FAA to check his driving record in 12/2017.

Autopsy

According to the autopsy performed at the request of the Owyhee County Coroner's Office, the cause of death was blunt force trauma. The body was fragmented and burned in the post impact fire. The brain was not examined, due to the extent of injury. The heart was fragmented and only a portion was available for examination, but no significant natural disease was identified.

Toxicology

Toxicology testing performed by the FAA's Forensic Science Laboratory did not identify any tested-for substances in muscle. However, the toxicology testing performed on liver tissue by NMS Labs at the request of the medical examiner identified caffeine, quinine, loratadine and its

¹ National Institutes of Health. US National Library of Medicine. DailyMed. Humulin.
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=e245e0c5-b2d6-418b-baa4-1c3324292885>
Accessed 1/8/2020.

² National Institutes of Health. US National Library of Medicine. DailyMed. Metformin.
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=2d98aea3-35ba-447a-b88f-a5a20b612b2f>
Accessed 1/8/2020.

³ National Institutes of Health. US National Library of Medicine. DailyMed. Ramipril.
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=8b59207a-ea5c-4697-a8b6-94c3015a00de>
Accessed 1/8/2020.

⁴ National Institutes of Health. US National Library of Medicine. DailyMed. Atorvastatin.
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1daa6f20-a032-4541-939d-931f36a020dd>
Accessed 1/8/2020.

⁵ National Institutes of Health. US National Library of Medicine. DailyMed. Levothyroxine.
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a3845f91-e0fe-42aa-8043-aeaac43f8eef>
Accessed 1/8/2020.

⁶ National Institutes of Health. US National Library of Medicine. DailyMed. Testosterone.
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=e18b4495-c5a3-4a7f-9636-179320784381>
Accessed 1/8/2020.

metabolite descarboethoxloratidine, and buprenorphine (11 ng/gm) and its metabolite norbuprenorphine (22 ng/gm). Further testing by the FAA lab found quinine and loratadine in liver tissue but no buprenorphine. However, the liver was significantly thermally damaged.

Drug Information

Caffeine is a sympathomimetic found in coffee and tea. Quinine is found in tonic water and is used as an antimalarial. Loratadine is a non-sedating antihistamine commonly marketed with the name Claritin.⁷ None of these substances are considered impairing.

Buprenorphine is an opioid agonist/antagonist available as a Schedule III controlled substance.⁸ It is most commonly used to treat opioid addiction while preventing overdose. In Idaho (and many other states) prescribing buprenorphine for opioid addiction requires extra training and licensing through the state. However, it can also be prescribed for the treatment of pain (most often in people with a history of opioid addiction). It carries warnings regarding the potential for addiction, central nervous system depression, the potential for withdrawal symptoms and this warning regarding driving, “Buprenorphine Sublingual Tablets may impair the mental or physical abilities required for the performance of potentially dangerous tasks such as driving a car or operating machinery, especially during treatment induction and dose adjustment. Caution patients about driving or operating hazardous machinery until they are reasonably certain that buprenorphine therapy does not adversely affect his or her ability to engage in such activities.”⁹

Personal Medical Records

Personal medical records were obtained from the pilot’s personal physician and specialists for the 3 years preceding the accident. According to record from his primary care physician at his last visit, dated 6/5/2018, the pilot had type 2 diabetes complicated by diabetic neuropathy, retinopathy, and chronic kidney disease, mild obstructive sleep apnea previously treated with throat surgery, hypothyroidism, high cholesterol, high blood pressure, and arthritis of the right hip. His medications at that

⁷ National Institutes of Health. US National Library of Medicine. DailyMed. Loratadine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=55d3ee36-116b-4ec6-b409-79d67a2b54ae> Accessed 8/8/2019.

⁸ Controlled substances are those that have been identified by the Drug Enforcement Administration as having the potential for abuse and dependence. Substances are placed in their respective schedules (I-V) based on whether they have a currently accepted medical use in treatment in the United States, their relative abuse potential, and likelihood of causing dependence when abused. Schedule I substances are not legally available because of limited medical use and high risk of abuse and dependence; Schedule II substances have a high potential for abuse which may lead to severe psychological or physical dependence. As the number of the Schedule goes up, the abuse and dependence potential goes down.

⁹ National Institutes of Medicine. US National Library of Medicine. DailyMed. Buprenorphine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=77d3c308-58b8-2ab0-e053-2991aa0a4918> Accessed 8/8/2019.

visit included: Levemir (long acting insulin), canagliflozin (marketed as Invokana), bromocriptine (marketed as Cycloset), and Humalog lispro (short acting insulin), to treat his diabetes; levothyroxine (marketed as Synthroid) to treat hypothyroidism; ramipril for blood pressure control; atorvastatin for high cholesterol, and a number of non-sedating vitamins as well as weekly testosterone.^{10,11,12,13,14,15,16} None of these medications are considered impairing with regular use.¹⁷

During a visit dated 4/26/2018, the pilot reported having had a car accident with minor injuries as a result of becoming acutely hypoglycemic (low blood sugar) without being aware of any symptoms before becoming unconscious. The physician noted, “He is also a private pilot and is very concerned about the fact that he really didn’t feel the loss of consciousness coming on.” The physician’s plan was to order the pilot a constant glucose monitor (a device that attaches to the skin and can send a message to a phone to alert when the blood sugar is rapidly dropping or going too high). However, insurance refused to pay for the monitor and the pilot did not obtain it. There are no further notes in the records regarding the pilot’s safety as a driver or as a pilot.

On December 1, 2017 the pilot visited the local emergency department stating that the aviation medical examiner had found an abnormal heartbeat during his aviation medical exam. The evaluation at the emergency department was normal, including an EKG which demonstrated normal sinus rhythm with a slow heart rate (bradycardia).

¹⁰ National Institutes of Medicine. US National Library of Medicine. DailyMed. Levemir. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d38d65c1-25bf-401d-9c7e-a2c3222da8af> Accessed 8/8/2019.

¹¹ National Institutes of Medicine. US National Library of Medicine. DailyMed. Invokana. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b9057d3b-b104-4f09-8a61-c61ef9d4a3f3> Accessed 8/8/2019.

¹² National Institutes of Medicine. US National Library of Medicine. DailyMed. Cycloset. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3e719d6a-342e-428b-93d3-377d31cb15c7> Accessed 8/8/2019.

¹³ National Institutes of Medicine. US National Library of Medicine. DailyMed. Humalog lispro. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c8ecbd7a-0e22-4fc7-a503-faa58c1b6f3f> Accessed 8/8/2019.

¹⁴ National Institutes of Medicine. US National Library of Medicine. DailyMed. Levothyroxine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a3845f91-e0fe-42aa-8043-aeaac43f8eef> Accessed 8/8/2019

¹⁵ National Institutes of Medicine. US National Library of Medicine. DailyMed. Ramipril. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=8b59207a-ea5c-4697-a8b6-94c3015a00de> Accessed 8/8/2019.

¹⁶ National Institutes of Medicine. US National Library of Medicine. DailyMed. Atorvastatin. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=cda119f2-54c8-4a08-b266-a0dbd214d2ce> Accessed 8/8/2019.

¹⁷ Cycloset may cause somnolence when initially begun but the effect wears off over time and the pilot had been using it for years.

Records related to multiple other visits to his primary care doctor, orthopedist, physical therapist, and pain treatment doctors did not reveal any prescription for buprenorphine or any underlying condition that would appropriately be treated with buprenorphine.

D. SUMMARY OF MEDICAL FINDINGS

The 73 year old male pilot had reported having type 2 diabetes (since 1989), high blood pressure, high cholesterol, and hypothyroidism to the FAA. His last medical certificate was dated 12/1/2016. At the time of his last exam, he was issued a special issuance third class medical certificate limited by a requirement he have available glasses for near vision and marked, "Not valid for any class after 12/31/2017. Not valid outside the borders of the United States."

The pilot completed the BasicMed educational course and obtained a BasicMed physician attestation in 12/2017.

According to the autopsy performed at the request of the Owyhee County Coroner's Office, the cause of death was blunt force trauma. The examination was limited by the extent of injury but no significant natural disease was identified.

Toxicology testing performed by the FAA's Forensic Science Laboratory did not identify any tested-for substances in muscle. Toxicology testing performed on liver tissue by NMS Labs at the request of the coroner identified caffeine, quinine, loratadine and its metabolite descarboethoxloratidine, and buprenorphine (11 ng/gm) and its metabolite norbuprenorphine (22 ng/gm). Further testing by the FAA lab found quinine and loratadine in liver tissue but no buprenorphine. However, the liver was significantly thermally damaged.

Personal medical records demonstrated that the pilot had early complications from his diabetes including retinopathy, neuropathy, and kidney disease, mild obstructive sleep apnea previously treated with throat surgery, hypothyroidism, high cholesterol, high blood pressure, and arthritis of the right hip. In addition, in April 2018 he had reported to his primary care physician that he had had a car accident as the result of sudden loss of consciousness due to acute hypoglycemia without any warning symptoms. No action was taken by his primary care physician to address his risk of a recurrent event while flying or driving other than to recommend a constant glucose meter (which was not in use by the time of the accident). None of the obtained medical records demonstrated a reason for or a prescription for buprenorphine.