

# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering Washington, DC

# **Medical Factual Report**

July 28, 2020

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# A. ACCIDENT: WPR19LA063; Kingman, AZ

On January 13, 2019, about 1045 mountain standard time, a Piper PA22-160 airplane, N9227D, was substantially damaged when it impacted mountainous terrain in the Hualapai County Park, Hualapai, Arizona under unknown circumstances. The student pilot received serious injuries, and the owner/non-pilot rated passenger received fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Unknown daylight meteorological conditions existed at the accident site about the time of the accident. No flight plan was filed for the flight, and no records of any pilot pre-flight briefing were discovered. The flight had reportedly originated from Kingman Airport (IGM), Kingman Arizona about 44 minutes prior to the accident.<sup>1</sup>

### **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 Federal Aviation Administration (FAA) medical case review and pilot's medical certification file were reviewed. Records from a pre-accident healthcare visit were reviewed. Records of the pilot's initial post-accident medical care, including emergency department (ED) records and an emergency medical

<sup>&</sup>lt;sup>1</sup> Summary taken from this accident's National Transportation Safety Board Aviation Accident Preliminary Report, originally published February 26, 2019.

services (EMS) pre-hospital care report, were reviewed. Your reports and relevant regulation and medical literature were also reviewed.

### 3. Findings

a. FAA Medical Case Review/Medical Certification File

According to reviewed FAA records, the 43-year-old male pilot's only aviation medical examination was on January 8, 2014. At that time, he reported 2 total flight hours, and he was 38 years old, 72 inches tall, and 185 pounds. He reported no active medical conditions or use of medications. He reported a single healthcare provider visit in the preceding 3 years, for cold and flu. No abnormal physical exam findings were identified, and urine screening for glucose (sugar) and albumin (protein) was normal. The pilot was issued a combined third-class medical certificate and student pilot certificate without limitation on January 8, 2014. Because the pilot was under 40 years old at the time of his medical examination, the duration of his combined certification was 60 full calendar months, through January 31, 2019.<sup>2</sup>

#### b.Pre-Accident Medical Records

Records were reviewed from the practice of the healthcare provider that the pilot (at his aviation medical examination) had reported visiting for cold and flu. Those records confirmed that the pilot had visited only once in October 2012. Contrary to the pilot's representation, the records indicated that the reason for the visit had been to establish care with a local primary doctor and endocrinologist. At the visit, the pilot had reported a diagnosis of type 1 diabetes since 2002, and a prior intensive care unit hospitalization in 2010 for diabetes-related severe metabolic disturbance. The pilot had reported fatigue and insomnia, and had stated that he would feel weak and shaky when his blood sugars dropped to the 120 milligrams per deciliter (mg/dL) range. The provider had noted that the pilot used fast-acting insulin and an insulin pump. Laboratory testing had been consistent with the pilot's diabetes diagnosis.

#### c.Post-Accident Medical Records

According to the records from the pilot's initial post-accident medical care in the ED, laboratory testing found abnormally elevated blood glucose of 328 mg/dL.<sup>3</sup> Blood bicarbonate, potassium, and anion gap were within normal

<sup>&</sup>lt;sup>2</sup> By 14 CFR 61.23(d)(3)(i) and 14 CFR 61.19(b)(1). [Office of the Federal Register. 14 CFR 61.23. Electronic Code of Federal Regulations. <u>https://www.ecfr.gov/cgi-bin/text-idx?node=se14.2.61\_123</u>. Updated July 22, 2020. Accessed July 24, 2020.] [Office of the Federal Register. 14 CFR 61.19. Electronic Code of Federal Regulations. <u>https://www.ecfr.gov/cgi-bin/text-idx?node=se14.2.61\_119</u>. Updated July 22, 2020. Accessed July 24, 2020.]

<sup>&</sup>lt;sup>3</sup> Normal random blood sugar levels depend on the timing of measurement relative to caloric intake. Generally, blood sugars less than 70 mg/dL are considered low, and (in hospitalized patients) random blood sugars greater than 140 mg/dL are considered elevated. For many adults with diabetes, recommended premeal blood sugars are between 80 and 130 mg/dL, and recommended peak after-meal blood sugars are less than 180 mg/dL. [American Diabetes Association. Standards of medical care in diabetes – 2020. *Diabetes Care*. 2020;43(Suppl. 1):S1-S212. <u>http://care.diabetesjournals.org/content/43/Supplement 1</u>. Accessed April 22, 2020.]

limits. The pilot reported having diabetes. Its type (1 or 2) was inconsistently documented. The patient medications section of an ED trauma flow sheet included the notation "insulin pump." The pilot's medication use was not otherwise documented on any history or physical examination in the ED physician notes, triage nursing notes, or EMS report.

A hospital blood test was negative for ethanol (alcohol).<sup>4</sup> A clinical urine drug screen was negative for amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, opiates, and phencyclidine (PCP).

According to the EMS report, the pilot had three seizures while being transported to the ED, each lasting less than 30 seconds. EMS assessed blood glucose to be 358 mg/dL. According to ED records, the pilot received a single dose of seizure medication, but had no witnessed seizures while in the ED. The pilot had evidence of head and facial injury including facial bruising, a forehead laceration, and a broken nose. He had no intracranial hemorrhage on imaging.

After his initial care, the pilot was diagnosed with multiple traumatic injuries and was transferred to another hospital for specialty trauma care.

### **D. SUMMARY OF MEDICAL FINDINGS**

At his only aviation medical examination on January 8, 2014, the 43-year-old (then 38-year-old) male pilot reported 2 total flight hours. He reported no active medical condition or medication usage, and no abnormalities were identified. He was issued a combined third-class medical certificate and student pilot certificate without limitation, valid through January 31, 2019.

According to pre-accident medical records, the pilot had a diabetes-related healthcare visit in October 2012. At the visit, the pilot reported having type 1 diabetes, diagnosed in 2002. The provider noted that the pilot used insulin and an insulin pump. The pilot reported that he would feel weak and shaky when his blood sugars dropped to the 120 milligrams per deciliter (mg/dL) range.

According to post-accident medical records, the pilot reported having diabetes. His blood glucose was elevated after the accident, measuring 328 mg/dL on laboratory testing. Blood bicarbonate, potassium, and anion gap were within normal limits. Limited clinical laboratory tests for alcohol and drugs of abuse were negative. Emergency medical services (EMS) had witnessed three brief seizures while transporting the pilot to the emergency department (ED), and had assessed his blood glucose to be 358 mg/dL. The pilot was given a dose of seizure medication and had no further witnessed seizures in the ED. The pilot had external evidence of head injury, without intracranial hemorrhage on imaging. He was transferred to another hospital for specialty care of multiple traumatic injuries.

 $<sup>^{4}</sup>$  The ethanol blood test had a reporting threshold of 0.010 grams per deciliter (g/dL). The result was published about 2.5 hours after the accident; reviewed records did not specify the time at which the sample was collected.