

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



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MEDICAL

Specialist's Factual Report

April 29, 2024

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A. ACCIDENT

Location: Caldwell, New Jersey
Date: September 9, 2022
Time: About 1132 local time

B. MEDICAL SPECIALIST

Specialist Turan Kayagil, MD, FACEP
National Transportation Safety Board
Washington, DC

C. DETAILS OF THE INVESTIGATION

1.0 Purpose

This investigation was performed to evaluate the pilot for potentially impairing substances and potentially impairing medical conditions.

2.0 Methods

A copy of the pilot's Federal Aviation Administration (FAA) medical certification file provided January 24, 2023, and selected hospital records from the pilot's post-crash treatment were reviewed. Selected investigator reports and relevant regulation and medical literature were also reviewed.

D. FACTUAL INFORMATION

1.0 FAA Medical Certification File

According to his FAA medical certification file, the 84-year-old male pilot's most recent aviation medical examination before the crash was on October 4, 2021. At that time, he reported 2,119 total civilian flight hours. He reported a medical history including chronic lymphocytic leukemia (CLL) in remission. His reported medications did not include any medications that are generally considered impairing. The Aviation Medical Examiner identified no significant issues and issued the pilot a third-class medical certificate, in accordance with an FAA Authorization for Special Issuance that the pilot had been granted for his history of CLL. The medical certificate was limited by a requirement to wear corrective lenses and carried a time limitation. The time limitation was extended by a new Authorization for Special Issuance in November 2021, and had not expired as of the crash date. In July 2022, the pilot submitted additional reports to the FAA, including July 2022 documentation by his oncologist that the pilot's CLL remained in remission.

The pilot's FAA medical certification file did not document any cardiovascular disease diagnosis or use of common medications for cardiovascular risk reduction. Aortic atherosclerotic change and extensive coronary artery calcification were identified incidentally on chest imaging performed in 2018.¹

2.0 Post-Crash Hospital Records

According to hospital records, the pilot was brought to hospital by emergency medical services (EMS) following the crash. EMS records contained in the hospital records noted that the pilot was initially disoriented and speaking with repetitive questioning upon EMS arrival, without obvious focal neurological deficits or injuries. EMS documented that the airplane passenger said the pilot had not hit his head or lost consciousness.

At the hospital, the pilot's electrocardiogram had some abnormalities but did not show acute rhythm disturbance or obvious acute heart attack. An initial laboratory test to assess for possible acute heart muscle damage was mildly abnormal. Laboratory studies were without evidence of any significant metabolic disturbance. Computed tomography (CT) imaging of the pilot's brain and the arteries of his brain and neck was unremarkable. The pilot underwent a tele-evaluation by a neurologist, who noted that the pilot had anterograde amnesia without focal findings. The pilot was admitted to the hospital for further neurological evaluation.

The pilot was seen in consultation by a hospital neurologist who documented that the pilot had some memory impairment without focal neurological deficits; the neurologist documented that the pilot's confusional episode in the airplane might represent transient global amnesia (TGA), but might also represent stroke or seizure.² Subsequent routine electroencephalogram (EEG) was normal without evidence of seizure. Ultrasound imaging of the pilot's heart showed normal muscle contraction and wall motion without valve abnormalities. The pilot underwent magnetic resonance imaging (MRI) of his brain on the afternoon of September 10, 2022. The consulting neurologist reviewed the MRI images and noted a right medial temporal lobe diffusion abnormality that could possibly be compatible with a TGA diagnosis, but could also represent focal ischemic stroke. The pilot was discharged from the

¹ Coronary artery calcification is associated with atherosclerosis in coronary arteries and is common, particularly in older individuals.

² TGA is a set of symptoms characterized by the sudden inability to form new memories. During a TGA episode, a patient may have disorientation with repetitive questioning, possibly also with inability to remember certain information from before the episode. By definition, TGA episodes resolve within 24 hours, with recovery of memory except of the episode itself. Several possible causes of TGA have been proposed. There are no tests to diagnose TGA, and testing generally focuses on excluding other potential diagnoses. In a minority of cases, TGA symptoms may be caused by stroke. [Mahler ME. Transient global amnesia. In: Post TW, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/transient-global-amnesia>. Updated April 12, 2024. Accessed April 26, 2024.]

hospital on September 10, 2022, with instructions to begin taking two common medications for stroke risk reduction and to have further outpatient follow-up. The pilot's discharge diagnosis was documented by the admitting hospitalist as TGA.

The final radiology interpretation of the pilot's MRI noted an acute-to-subacute lacunar infarct in the right medial temporal lobe.³ Mild nonspecific white matter signal abnormality likely corresponding to microvascular disease was also noted.

The pilot did not undergo toxicological testing in the hospital. Hospital documentation of his reported home medications was generally consistent with the medications he reported at his October 2021 aviation medical examination.

E. SUMMARY OF MEDICAL FACTS

The 84-year-old male pilot's most recent aviation medical examination before the crash was on October 4, 2021. At that time, he reported a medical history including chronic lymphocytic leukemia (CLL) in remission. His reported medications did not include any medications that are generally considered impairing. The Aviation Medical Examiner issued the pilot a third-class medical certificate, in accordance with an FAA Authorization for Special Issuance for CLL. The medical certificate was limited by a requirement to wear corrective lenses and carried a time limitation, which had not expired as of the crash date. In July 2022, the pilot submitted additional reports to the FAA indicating that his CLL remained in remission.

Following the crash, medical providers noted that the pilot had symptoms of memory problems without focal neurological deficits. The pilot was hospitalized for neurological evaluation and consultation. Magnetic resonance imaging (MRI) of the pilot's brain performed the day after the crash demonstrated an acute-to-subacute lacunar stroke in the right medial temporal lobe. The pilot was discharged from the hospital the day after the crash with a diagnosis of transient global amnesia (TGA). The pilot did not undergo post-crash toxicological testing.

Submitted by:

Turan Kayagil, MD, FACEP
Medical Officer

³ A lacunar infarct is a small ischemic stroke that does not involve the brain cortex.