



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

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Michelle Watters, MD, PhD, MPH
Medical Officer

A. ACCIDENT: WPR19LA013; Kaneohe, Hawaii

On October 22, 2018, about 1710 Hawaiian standard time, a Robinson R44 helicopter, N4132H, was substantially damaged during a hard landing on the Kaneohe Sandbar, a large area of sand covered by shallow water, located in Kaneohe Bay, near Kaneohe, Hawaii. The commercial pilot and two passengers sustained serious injuries. The helicopter was registered to Higgins Leasing Inc. and operated by Novictor Aviation under the provisions of Title 14 *Code of Federal Regulations* Part 91 as an air tour flight. Visual meteorological conditions prevailed for the local flight, and a company flight plan was filed. The helicopter originated from Honolulu International Airport, Honolulu, Hawaii at 1647, and was planned to complete a 45-minute circle island route flight.

In a statement from the pilot, about 20 minutes into the flight he felt himself lose consciousness; moments later he regained consciousness and control of the helicopter. The pilot changed course from following along the coast to turning towards the coast, then prepared himself for a precautionary landing. Seconds later he lost consciousness again, then woke up from the actions of the first responders. The pilot remembers being in a dream-like state during his loss of consciousness, and in the dream-like state, he was piloting the helicopter and knew that he was in an emergency situation. Although he didn't know what the emergency was, he remembers not quite seeing the instruments and that it was important that he not let go of the helicopter controls. The passengers stated in an interview, that they remember the pilot slumping over during the flight, and the front seat passenger grabbing the controls to slow the descent before impacting the sandbar.²

B. GROUP IDENTIFICATION

No group was formed for the medical evaluation in this accident.

¹ Typographical error in section D revised 1/12/22.

² Please see the public docket for this accident for pilot statements and transcript of interviews with passengers.

C. DETAILS OF INVESTIGATION

Purpose

This investigation was performed to evaluate the pilot for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

Methods

The FAA medical certification files which contained some pre-accident medical records and post-accident hospital and medical records were reviewed. Other pertinent scientific and regulatory issues were examined.

FAA Medical Certification Files

According to the FAA medical certification files, at the time of the accident, the 57-year-old male pilot held a first class medical certificate³ without limitations. His aviation medical exam had been performed on 11/6/17 and he reported 1,451 total flight hours. On that exam, the pilot reported having high cholesterol, taking aspirin, and having a history of mitral valve replacement surgery in 2012.

Since 2013, the pilot had received an FAA special issuance for his mitral valve replacement, that required providing periodic cardiovascular evaluations to FAA. These updates entailed providing electrocardiograms (ECG), stress echocardiography results, and other supporting information from his cardiologist. The pilot's common ECG findings were a slower than normal heartbeat with a first-degree heart block;⁴ other cardiac tests were reported as essentially normal with mild mitral valve regurgitation. His cardiologist reported that his valve was in good condition and had placed no restrictions on his activities.

The pilot's first medical certification examination was in 2007. Subsequent examinations until the detection of an asymptomatic heart murmur by the aviation medical examiner on the 2012 visit did not note any significant medical findings.

The FAA medical certification files also contained records for a recent, post-accident, FAA medical examination performed on 1/29/19. The pilot received a first class medical certificate with the limitation that he possess glasses for near vision; he received a special issuance for the permanent pacemaker.

In support of the special issuance, the FAA file also contained post-accident hospital records. The pilot had been admitted for the witnessed loss of consciousness episodes and for a crash-related fracture of his left radius. The cardiac workup for a heart attack was negative and his

³ The pilot was issued a first class medical certificate on 11/6/17 that was valid for 6 months. At the time of the accident, the certificate would have been downgraded to a second class medical certificate.

⁴ Heart block refers to slowed or interruption of electrical signals from the upper chambers to the lower chambers of the heart. First degree heart block is the mildest form and is rarely associated with symptoms. Third degree or complete heart block is the most severe and is a medical emergency. The heart chambers do not beat sequentially, preventing enough blood being pumped to the body which can result in fainting. (National Library of Medicine (NLM), MedlinePlus, Heart Block, updated 11/9/19. <https://medlineplus.gov/ency/article/007658.htm>)

echocardiogram showed normal function with an ejection fraction of 55-60%.⁵ The pilot was placed on continuous cardiac monitoring, and on his second day, several successive 10-15 second episodes of high grade heart blocks were detected with a quick return to normal rhythm without medications or intervention. The pilot received a permanent pacemaker during that hospital stay.

D. SUMMARY OF MEDICAL FINDINGS

At the time of the accident, the 57-year-old male pilot held a first class medical certificate without limitations. The pilot has received a special issuance for his mitral valve replacement surgery in 2012, that required periodic cardiology updates. He was known to have a first degree heart block. Other than aspirin, he was taking no medications, but reported high cholesterol.

The pilot experienced and was witnessed to have a loss of consciousness prior to his crash. During his hospital stay, he had documented episodes of complete heart block, which required placement of a permanent pacemaker.

⁵ An echocardiogram is an ultrasound test which shows the heart while it is beating. It shows the heart valves, walls, and other structures. The echocardiogram can detect if the heart is functioning normally and measures how much blood is being pumped (ejection fraction). The normal ejection fraction is around 55-60%. (NLM, MedlinePlus, Heart Failure Tests, updated 11/6/19. <https://medlineplus.gov/ency/patientinstructions/000366.htm>)