



MEMORANDUM for RECORD

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Eastern Region Aviation

Date: November 2, 2020
NTSB Medical Officer Factual Information
NTSB Accident Number: ERA19FA188 – Castalia, NC

Reports provided:

Private pilot:

According to the FAA medical case review, the 58-year-old private pilot held a third class medical certificate with the limitation that he must have available glasses for near vision. His most recent FAA medical certification exam was on 4/25/19 and at that time he reported he had accrued 290 total flight hours. He was 73 inches tall and weighed 170 pounds. He reported taking ramipril for high blood pressure and having hay fever. No other significant medical concerns or issues were identified.

According to the Office of the Chief Medical Examiner, Raleigh, North Carolina autopsy report, the cause of death of the private pilot was blunt force injuries due to airplane crash and the manner of death was accident. The exam was limited by extensive injuries; no natural disease was identified by the medical examiner.

Toxicology testing performed by the FAA Forensic Sciences laboratory detected ethanol in the private pilot's liver tissue at 0.020 grams per hectogram (gm/hg);[2] no ethanol was detected in muscle tissue. No other tested for drugs were detected in muscle tissue.

Pilot-rated passenger:

According to the FAA medical case review, the 54-year-old pilot-rated passenger held a third class medical certificate without limitations. His most recent FAA medical certification exam was on 4/24/19 and at that *time* he reported he had accrued 1,062

total flight hours. He was 72 inches tall and weighed 210 pounds. He reported taking olmesartan for high blood pressure. No other significant medical concerns or issues were identified.

According to the Office of the Chief Medical Examiner, Raleigh, North Carolina autopsy report, the cause of death of the pilot-rated passenger was blunt force injuries due to airplane crash and the manner of death was accident. The exam was limited by extensive injuries; no contributory natural disease was identified by the medical examiner.

Toxicology testing performed by the FAA Forensic Sciences laboratory detected ethanol in the pilot-rated passenger's muscle tissue at 0.015 gm/hg; no ethanol was detected in liver tissue. Irbesartan, a non-impairing medication used to treat high blood pressure, was detected in liver and muscle tissue. Toxicology testing detected marijuana's inactive metabolite carboxy-delta-9-tetrahydrocannabinol (THC-COOH) was detected in the pilot-rated passenger's liver tissue.

Relevant medical information:

Ethanol:

Ethanol is a social drug commonly consumed by drinking beer, wine, or liquor. It acts as a central nervous system depressant; it impairs judgment, psychomotor functioning, and vigilance. 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. A small amount of ethanol can be produced after death by microbial activity, usually in conjunction with other alcohols, such as propanol.

Marijuana:

The marijuana plant (*Cannabis sativa*) contains chemicals called cannabinoids; tetrahydrocannabinol (THC) is the primary psychoactive cannabinoid compound. THC's mood-altering effects include euphoria and relaxation. In addition, marijuana causes alterations in motor behavior, time and space perception, and cognition. Significant performance impairments are usually observed for at least 1-2 hours following marijuana use, and residual effects have been reported up to 24 hours.

THC is rapidly metabolized but the rate of metabolism is not linear and depends on the means of ingestion (smoking, oil, and edibles), potency of the product, frequency of use, and user characteristics. The primary metabolite, 11-hydroxy-delta-9-THC, is equally psychoactive, but is rapidly metabolized to the non-psychoactive metabolite THC-COOH. THC is fat soluble, so is stored in fatty tissues and can be released back into the blood long after consumption. So, while the psychoactive effects may last a few hours, THC can be detected in the body for days or weeks. Thus, test results do not

necessarily reflect recent use and cannot be used to prove that the user was under the influence of the drug at the time of testing.