



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

February 22, 2018

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Chief Medical Officer

A. ACCIDENT: WPR16FA178; Reno, NV

On September 11, 2016, at 1813 Pacific daylight time, a Piper PA-28R-201T, N821ET, collided with vehicles in an airport parking lot after takeoff from Reno/Tahoe International Airport, Reno, Nevada. The airplane was registered to RCS3 LLC, and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot and two passengers were fatally injured, and the airplane sustained substantial damage. The crosscountry flight was destined for San Carlos Airport, San Carlos, California. Visual meteorological conditions prevailed, and an instrument flight rules flight plan had been filed.

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 any medical conditions, the use of any medications/illicit drugs, and the presence of any toxins.

2. Methods

The FAA medical case review, autopsy report, toxicology results, personal medical records, and the investigator's reports were reviewed.

FAA Medical Case Review

According to the FAA medical case review, the 57 year old male pilot reported 640 total civilian hours of flight experience on his last medical exam, dated 1/31/2015. At that time, he was 66 inches tall and weighed 210 pounds. He had reported having hay fever as well as several previous orthopedic surgeries, a tonsillectomy, gall bladder removal, and gastric

bypass surgery, but reported using no medications. He was issued a third class medical certificate limited by a requirement to have available glasses for near vision.

Autopsy

According to the autopsy performed by the Washoe County Medical Examiner's Office, the cause of death was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified.

Toxicology

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory identified acetaminophen, hydrocodone and its active metabolite dihydrocodeine, ibuprofen, meprobamate, morphine, nordiazepam, oxazepam, temazepam, and oxymorphone in urine. In addition, 0.04 ug/ml of diazepam, 0.111 ug/ml of its active metabolite, nordiazepam, 0.021 ug/ml of hydrocodone, and 2.243 ug/ml of meprobamate were confirmed in cavity blood.

Acetaminophen is a common analgesic often marketed with the name Tylenol and used in combination with a number of opioids. Hydrocodone is a prescription opioid available as a Schedule II controlled substance, often marketed in combination with acetaminophen as Norco, Lortab, and Vicodin.¹ Its active metabolite, dihydrocodeine, is sold as a separate prescription opioid in other countries as a controlled substance. Hydrocodone carries this warning, "Concomitant use of opioids with benzodiazepines or other central nervous system (CNS) depressants, including alcohol, may result in profound sedation, respiratory depression, coma, and death."² Ibuprofen is an over the counter analgesic often marketed with the names Advil and Motrin. It is not considered impairing.

Meprobamate is a prescription anxiolytic medication available as a Schedule IV controlled substance, often marketed with the name Miltown. It carries this warning, "Patients should be warned that meprobamate may impair the mental and/or physical abilities required for performance of potentially hazardous tasks such as driving or operating machinery."³ It is also the active metabolite of carisoprodol, a prescription used to treat muscle pain, also a Schedule IV controlled substance, often marketed with

¹ The Drug Enforcement Administration identifies substances with the potential for addiction and misuse on a set of schedules. Schedule I substances have no known medical use and great potential for misuse. The risk of misuse decreases through the 5 schedules.

² National Institutes of Health. US National Library of Medicine. DailyMed. Hydrocodone and acetaminophen. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=fa32969f-7210-47ec-bbd1-f62bea8989a7> Accessed 2/22/2018.

³ National Institutes of Health. US National Library of Medicine. DailyMed. Meprobamate. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a27d7877-38e4-4437-afd3-3d570c0dead1> Accessed 2/22/2018.

the name Soma. It is known to be sedating and carries this warning, “may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a motor vehicle or operating machinery. There have been post-marketing reports of motor vehicle accidents associated with the use of carisoprodol. Since the sedative effects of carisoprodol and other central nervous system depressants (e.g., alcohol, benzodiazepines, opioids, tricyclic antidepressants) may be additive, appropriate caution should be exercised with patients who take more than one of these CNS depressants simultaneously.”⁴

Morphine is a separate opioid analgesic available as a Schedule II controlled substance in oral and IV forms; it is also the active metabolite of codeine and heroin. It carries this warning, “like all opioid analgesics, (morphine) should be used with great caution and in reduced dosage in patients who are concurrently receiving other central nervous system depressants including sedatives or hypnotics, general anesthetics, phenothiazines, other tranquilizers and alcohol because respiratory depression, hypotension and profound sedation or coma may result.”⁵

Nordiazepam is an active metabolite of diazepam, a benzodiazepine used to treat anxiety, seizures, and muscle spasms. Diazepam is available as a Schedule IV controlled substance and is often marketed with the name Valium. Oxazepam and temazepam are two additional psychoactive metabolites. Each is also marketed as a separate drug, often with the names Serax and Restoril, respectively. It carries this warning, “Patients should be advised against the simultaneous ingestion of alcohol and other CNS-depressant drugs during diazepam therapy. As is true of most CNS-acting drugs, patients receiving diazepam should be cautioned against engaging in hazardous occupations requiring complete mental alertness, such as operating machinery or driving a motor vehicle.”⁶

Oxymorphone is another opioid available by prescription as a Schedule II controlled substance, often marketed with the name Opana. It is also a metabolite of oxycodone, another Schedule II opioid, which is often marketed with the name Percocet. It carries this warning, “Concomitant use of opioids with benzodiazepines or other central nervous system

⁴ National Institutes of Health. US National Library of Medicine. DailyMed. Carisoprodol. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=ab22f1be-16c8-45b6-adaf-09e08bf7a545> Accessed 2/22/2018.

⁵ National Institutes of Health. US National Library of Medicine. DailyMed. Morphine extended release tablets. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a2c1f1b7-70b0-416b-8bdf-9eaed156e34b> Accessed 2/22/2018.

⁶ National Institutes of Health. US National Library of Medicine. DailyMed. Diazepam tablets. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7d81850c-ad3f-4e2e-ac41-ed9c567aca4b> Accessed 2/22/2018.

(CNS) depressants, including alcohol, may result in profound sedation, respiratory depression, coma, and death.”⁷

The metabolism pathways for hydrocodone, morphine, and oxymorphone do not overlap; the findings indicate the pilot had used 3 separate opioids.

Personal Medical Records

According to records obtained from the pilot’s primary care physician, for the period between 2013 and 2016, the pilot had an episode of back pain and pain radiating down one leg in March 2014. It was treated with opioid medication and resolved but recurred in February 2015. After more opioids and steroid injections, it resolved. But in May 2015 it recurred. During the appointment with his primary care provider, the pilot specifically asked for “stronger” medications. He was referred to a pain specialist. His last visit to the primary care provider was on 12/22/2015 and his ongoing use of oxycodone (30 mg/day) and carisoprodol (350 mg at bedtime) was documented. That visit was for a foot injury; no later visits were documented.

D. SUMMARY OF MEDICAL FINDINGS

The 57 year old male pilot had reported having hay fever as well as several previous orthopedic surgeries, a tonsillectomy, gall bladder removal, and gastric bypass surgery, but reported using no medications to the FAA.

According to the autopsy performed by the Washoe County Medical Examiner's Office, the cause of death was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified.

Toxicology testing performed by the FAA’s Bioaeronautical Sciences Research Laboratory identified acetaminophen, hydrocodone and its active metabolite dihydrocodeine, ibuprofen, meprobamate, morphine, nordiazepam, oxazepam, temazepam, and oxymorphone in urine. In addition, 0.04 ug/ml of diazepam, 0.111 ug/ml of its active metabolite, nordiazepam, 0.021 ug/ml of hydrocodone, and 2.243 ug/ml of meprobamate were confirmed in cavity blood. The metabolism pathways for hydrocodone, morphine, and oxymorphone do not overlap; the findings indicate the pilot had used 3 separate opioids.

According to records from his primary care doctor, the pilot had had a series of episodes of back pain for which he had been referred to a pain specialist. During his last visit to the primary care provider (12/22/2015), his ongoing use of oxycodone (30 mg/day) and carisoprodol (350 mg at bedtime) was documented.

⁷ National Institutes of Health. US National Library of Medicine. DailyMed. Oxymorphone. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=22c7652a-aa16-4fa8-89d9-517e69059068>
Accessed 2/22/2018.

