



# Aviation Investigation Final Report

<b>Location:</b>	Salinas, California	<b>Accident Number:</b>	WPR15LA193
<b>Date &amp; Time:</b>	June 20, 2015, 07:15 Local	<b>Registration:</b>	N4427F
<b>Aircraft:</b>	Bell 47G 5	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 137: Agricultural		

## Analysis

The non-instrument-rated pilot was conducting aerial application flights in the helicopter and had completed several work orders at various locations before the accident flight. Two coworkers refilled the fertilizer tank on the helicopter and saw it depart from the loading area. About the time that the helicopter was expected to return, a thick fog came in, and the visibility dropped to about 15 to 20 ft. When the helicopter did not return, one of the coworkers searched for the helicopter and found the accident site. Examination of the wreckage did not reveal evidence of any pre-impact mechanical failures. It is likely that the pilot lost visual contact with the ground due to the fog and subsequently experienced spatial disorientation and lost control of the helicopter. This pilot had a similar accident in the helicopter about 5 years earlier, which suggests that he had a habit of taking risks with the weather.

Toxicology testing of the pilot was positive for hydrocodone, dihydrocodeine, acetaminophen, and hydromorphone. The hydrocodone level in the pilot's peripheral blood was 0.718 ug/ml, which was more than 10 times the usual upper therapeutic limit of 0.05 ug/ml. Hydrocodone and its metabolites do not undergo significant postmortem redistribution. Therefore, the measured levels of hydrocodone most likely represent the pilot's antemortem levels. If the pilot had been a novice user, this level would likely have been toxic and caused severe symptoms. However, with regular opioid use, brain physiology changes, leading to tolerance for both the desired analgesic effects and the sedative effects. As a result, incremental dosing increases are required to achieve the same effects, and long-term, chronic users may need the drug to feel and act "normally." The levels present in the pilot indicate that he was chronically taking high doses of hydrocodone. It is likely that the pilot was impaired by opioids at the time of the accident.

In the high workload situation of piloting a helicopter in low altitude flight, even a small degree of impairment from the pilot's use of a high-dose of opioid would have contributed to the likelihood of an accident.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The non-instrument-rated pilot's visual flight rules flight into instrument meteorological conditions, which resulted in his spatial disorientation and loss of helicopter control. Contributing to the accident was the pilot's impairment by high-dose opioid use.

### Findings

<b>Personnel issues</b>	Qualification/certification - Pilot
<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Personnel issues</b>	Spatial disorientation - Pilot
<b>Personnel issues</b>	Aircraft control - Pilot
<b>Personnel issues</b>	Illicit drug - Pilot
<b>Environmental issues</b>	Fog - Effect on operation
<b>Environmental issues</b>	Fence/fence post - Contributed to outcome

## Factual Information

### History of Flight

<b>Maneuvering-low-alt flying</b>	Loss of control in flight (Defining event)
<b>Maneuvering-low-alt flying</b>	Collision with terr/obj (non-CFIT)

On June 20, 2015, about 0715 Pacific daylight time, a Bell 47G-5 helicopter, N4427F, impacted a fence and terrain while maneuvering about 5 miles southwest of the Salinas Municipal Airport (SNS), Salinas, California. The commercial pilot was fatally injured, and the helicopter sustained substantial damage. The helicopter was registered to and operated by Gomes Farm Air Service, Inc., under the provisions of Title 14 *Code of Federal Regulations* Part 137. Instrument meteorological conditions prevailed, and no flight plan was filed. The local aerial application flight originated from a loading area near the accident site about 0650.

According to a tachograph card found in the wreckage, the pilot had completed six different work orders at various locations on the morning of the accident.

Two witnesses, who worked for the operator, refilled the fertilizer tank on the helicopter and saw it depart from the loading area. According to the witnesses, about the time that the helicopter was expected to return, a thick fog came in, and the visibility dropped to about 15 to 20 ft. The witnesses became concerned when the helicopter failed to return for its scheduled rinse load. One of them searched for the helicopter and found the accident site nearby.

### Pilot Information

<b>Certificate:</b>	Commercial; Private	<b>Age:</b>	67
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	February 10, 2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	November 29, 2014
<b>Flight Time:</b>	17500 hours (Total, all aircraft)		

The pilot, age 67, held a commercial pilot certificate with airplane single-engine land and rotorcraft-helicopter ratings. He did not hold an instrument rating. Federal Aviation Administration (FAA) records indicated that the pilot's most recent third-class airman medical certificate was issued on February 10, 2014, with the limitation that the pilot "must wear corrective lenses." According to the pilot's application for this medical, he had accumulated a

total of 17,500 hours of flight time of which 200 hours were within the last 6 months.

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Bell	<b>Registration:</b>	N4427F
<b>Model/Series:</b>	47G 5	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	1970	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Restricted (Special)	<b>Serial Number:</b>	7971
<b>Landing Gear Type:</b>	N/A; High skid	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	February 6, 2015 Annual	<b>Certified Max Gross Wt.:</b>	2257 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	8275.4 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>		<b>Engine Model/Series:</b>	VO 435 B1A
<b>Registered Owner:</b>	GOMES FARM AIR SERVICE INC	<b>Rated Power:</b>	265 Horsepower
<b>Operator:</b>	GOMES FARM AIR SERVICE INC	<b>Operating Certificate(s) Held:</b>	Agricultural aircraft (137)

The helicopter, a Bell 47G-5, serial number 7971, was manufactured in 1970 and was issued a restricted category airworthiness certificate on May 17, 2012. The helicopter's type certificate data sheet indicated that it seated two and had a maximum gross weight of 2,257 pounds. The helicopter was configured for agriculture and pest control operations. The most recent annual inspection was conducted on February 6, 2015, at a total airframe time of 8,275 hours.

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KOAR,144 ft msl	<b>Distance from Accident Site:</b>	3 Nautical Miles
<b>Observation Time:</b>	13:53 Local	<b>Direction from Accident Site:</b>	297°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	7 miles
<b>Lowest Ceiling:</b>		<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/ N/A
<b>Altimeter Setting:</b>	29.92 inches Hg	<b>Temperature/Dew Point:</b>	12°C / 9°C
<b>Precipitation and Obscuration:</b>	Heavy - None - Fog		
<b>Departure Point:</b>	Salinas, CA	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Salinas, CA	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class G

At 0653, the SNS weather reporting facility, located about 5 miles east of the accident site, reported wind calm, visibility 7 statute miles, sky condition clear, temperature 12°C, dew point 9°C, and an altimeter setting of 29.92 inches of mercury.

At 0653, the recorded weather at Monterey Regional Airport, Monterey, California, about 9 miles southwest of the accident site, was wind 290° at 3 knots, visibility 1 statute mile, mist, overcast at 200 ft, temperature 12°C, dew point 11°C, and an altimeter setting of 29.93 inches of mercury.

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	36.658889,-121.707496

An FAA inspector examined and documented the wreckage on-scene. The helicopter came to rest on a road near a lettuce field. An opening was torn in a wired fence that ran parallel to the road about 40 ft northeast of the main wreckage. Powerlines running in an east-west direction about 50 ft south of the accident site were undamaged. During the examination, the inspector did not identify any anomalies or malfunctions with the helicopter.

## Medical and Pathological Information

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The Monterey County Sheriff-Coroner's Office, Salinas, California, performed an autopsy of the pilot. The autopsy report listed blunt force injuries as the cause of death. The autopsy also identified an enlarged heart and significant coronary artery disease with 50-75% stenosis of two coronary arteries.

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicology testing of the pilot and identified 0.718 ug/ml of hydrocodone and 0.098 ug/ml of dihydrocodeine in blood and 224 ug/ml of acetaminophen, 4.61 ug/ml of dihydrocodeine, 36.917 ug/ml of hydrocodone, and 12.99 ug/ml of hydromorphone in urine.

Hydrocodone is a prescription opioid identified as a Schedule II controlled substance by the Drug Enforcement Administration. It is most commonly sold in combination with acetaminophen, often with the names Vicodin and Lortab. It carries several warnings, including, "hydrocodone, like all narcotics, may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery," and "alcohol and other CNS (central nervous system) depressants may produce an additive CNS depression, when taken with this combination product, and should be avoided."

Dihydrocodeine and hydromorphone are each opioid analgesics, but they are also metabolites of hydrocodone. Hydrocodone's usual therapeutic levels are between 0.010 and 0.050 ug/ml. Dihydrocodeine's usual therapeutic levels are between 0.050 and 0.150 ug/ml.

The pilot had reported no chronic medical conditions and no chronic medication use to the FAA. At the time of the autopsy, a small plastic baggie containing 5 tablets labeled M367 was found in the pilot's pocket. The autopsy report identified these tablets as a combination of 325 mg of acetaminophen and 10 mg of hydrocodone.

## **Additional Information**

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The pilot was involved in a helicopter accident on September 3, 2010, where he received serious injuries, and the Bell 47G helicopter was substantially damaged (NTSB accident number WPR10LA446). The NTSB determined that the probable cause of the accident was the pilot's visual flight rules flight into instrument meteorological conditions, which resulted in his spatial disorientation and loss of helicopter control.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Swick, Andrew
<b>Additional Participating Persons:</b>	Wilbert J Robinson; FAA FSDO; San Jose, CA
<b>Original Publish Date:</b>	March 14, 2018
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=91405">https://data.nts.gov/Docket?ProjectID=91405</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).