



Aviation Investigation Final Report

Location:	Desert Center, California	Accident Number:	WPR13FA388
Date & Time:	August 26, 2013, 13:30 Local	Registration:	N61VT
Aircraft:	American Aviation AA-1A	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

The pilot was on an aerial photography mission during day visual flight rules conditions. A witness located near the accident site reported that he saw the airplane about 1,000 ft above the ground when it made a sharp, 180-degree turn. The airplane's wings then dipped side-to-side, and he could see the top and bottom of the airplane. The airplane's nose started to move down, and it then abruptly moved back up while the airplane proceeded in an easterly direction. The airplane entered a second nosedive and then rolled 180 degrees counterclockwise before it crashed. Several witnesses reported hearing the engine stop, pop, or sputter at some point in their observations of the airplane. However, postaccident examination of the airframe and engine did not reveal any anomalies that would have precluded normal operation. Based on the airplane's observed attitude while maneuvering, it is likely that the pilot entered an accelerated stall and subsequent loss of airplane control from which he did not recover. Although toxicological testing detected the sedating antihistamine diphenhydramine in the pilot's liver, insufficient evidence existed to determine whether pilot impairment from the medication contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's abrupt maneuver, which resulted in an accelerated stall and a loss of airplane control at low altitude.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Angle of attack - Capability exceeded
Personnel issues	Incorrect action performance - Pilot
Personnel issues	Use of medication/drugs - Pilot

Factual Information

History of Flight

Maneuvering	Loss of control in flight (Defining event)
Maneuvering	Collision with terr/obj (non-CFIT)

On August 26, 2013, about 1330 Pacific daylight time, a Grumman AA-1A, N61VT, collided with terrain near Desert Center, California. The pilot/owner was operating the airplane under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. The commercial pilot and one passenger sustained fatal injuries; the airplane was destroyed by impact forces and a post-crash fire. The local aerial photography flight departed Desert Center Airport at an undetermined time. Visual meteorological conditions prevailed, and no flight plan had been filed.

There had recently been heavy rains and localized flooding in the area. The purpose of the flight was to assess any damage to a solar power facility.

A Sheriff's Deputy observed the accident. He saw the airplane about 1,000 feet above the ground, and making erratic maneuvers. The airplane was traveling in a westerly direction, and made a sharp U-turn to the east. The deputy started discussing the maneuver with his passengers while observing the airplane's wings dip side-to-side, exposing the top and bottom of the airplane. The nose started to move down toward the ground, and then abruptly moved back up toward the sky while still proceeding in an easterly direction. The airplane started a second nosedive toward the ground, and turned counterclockwise exposing the top of the airplane before it crashed into the ground.

Eleven witnesses were involved in work on a nearby fence line. Three of them reported observing the airplane make an abrupt turn from west to the east. Seven reported hearing the engine stop, pop, or sputter at some point in their observations; three did not report any engine cutouts.

Pilot Information

Certificate:	Commercial	Age:	41
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	July 9, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	750 hours (Total, all aircraft)		

A review of Federal Aviation Administration (FAA) airman records revealed that the 41-year-old pilot held a commercial pilot certificate with ratings for airplane single-engine land, multiengine land, and instrument airplane. The pilot held a third-class medical certificate issued in July 19, 2011, with no limitations or waivers.

No personal flight records were located for the pilot. The IIC obtained the aeronautical experience listed in this report from a review of the FAA airmen medical records on file in the Airman and Medical Records Center located in Oklahoma City, Oklahoma. The pilot reported on his medical application that he had a total time of 750 hours with 0 hours logged in the previous 6 months.

Aircraft and Owner/Operator Information

Aircraft Make:	American Aviation	Registration:	N61VT
Model/Series:	AA-1A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	AA1A-0047
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:		Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:		Engine Model/Series:	O-320-E2G
Registered Owner:	Michael Cyr	Rated Power:	150 Horsepower
Operator:	Michael Cyr	Operating Certificate(s) Held:	None

The airplane was a Grumman AA1-A, serial number AA1A-0047. No maintenance logbooks were recovered for the airplane. The engine was a Lycoming O-320-E2G, serial number L-48438-27A.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KBLH	Distance from Accident Site:	
Observation Time:	13:52 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	13 knots / 18 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	330°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	32°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Desert Center, CA	Type of Flight Plan Filed:	None
Destination:	Desert Center, CA	Type of Clearance:	None
Departure Time:	Type of Airspace:		

An aviation routine weather report (METAR) for Blythe (KBLH), California, elevation 399 feet, 33 nautical miles (nm) east of the accident site, issued at 1352 stated: wind from 330 degrees at 13 knots gusting to 18 knots; visibility 10 miles; sky clear; temperature 32/90 degrees C/F; dew point 21/70 degrees C/F; altimeter 29.88 inches of mercury.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	33.380001,-115.364997

The National Transportation Safety Board investigator-in-charge (IIC) traveled in support of this investigation, and performed an examination of the wreckage on scene. A detailed report is in the public docket for this accident.

The airplane came to rest upright. The cabin section was consumed by fire. The vertical stabilizer separated, and was 30 feet aft of the empennage. The propeller separated from the flange, and was about 3 feet in front of the engine. The engine was nose down with the propeller flange touching the dirt.

The IIC established control continuity on scene for the elevator and rudder. Debris prevented

examination of the aileron system.

Medical and Pathological Information

The Riverside County Sheriff-Coroner completed an autopsy, and determined that the cause of death was multiple blunt impact injuries.

The FAA Forensic Toxicology Research Team, Oklahoma City, performed toxicological testing of specimens of the pilot. Analysis of the specimens for the pilot contained no findings for volatiles; they did not perform tests for carbon monoxide or cyanide.

The report contained the following findings for tested drugs: diphenhydramine detected in liver; pseudoephedrine detected in muscle and liver; and ibuprophen detected in liver.

Tests and Research

Investigators from the NTSB, FAA, and Lycoming Engines examined the wreckage at Aircraft Recovery Service, Littlerock, California, on August 28, 2013. No discrepancies were observed that would have precluded normal operation of the airplane or its components.

A full report is contained within the public docket for this accident.

Removal of the top spark plugs revealed that all center electrodes were circular and clean with no mechanical deformation. The spark plug electrode for cylinder number one was wet from a black fluid. The other electrodes were gray, which corresponded to normal operation according to the Champion Aviation Check-A-Plug AV-27 Chart.

A borescope inspection revealed no mechanical deformation on the valves, cylinder walls, or internal cylinder head. The crankshaft was manually rotated with a tool in an accessory drive gear. The crankshaft rotated freely, and the valves moved approximately the same amount of lift in firing order. The gears in the accessory case turned freely. Thumb compression was obtained on all cylinders in firing order.

The magnetos' driveshafts were manually rotated and both magnetos produced spark at all posts.

The spinner was crushed aft to the hub. One propeller blade had leading edge polishing, and was twisted toward the low pitch, high rpm position. The other blade was twisted toward the low pitch, high rpm position.

Additional Information

Carburetor Ice

The carburetor icing probability chart from FAA Special Airworthiness Information Bulletin (SAIB): CE-09-35 Carburetor Icing Prevention, June 30, 2009, shows a probability of icing at cruise/glide power and serious icing at glide power at the temperature/dew point (90/70 F) reported at the time of the accident.

Stalls

According to the FAA Airplane Flying Handbook (FAA-H-8083-3A), under the Accelerated Stalls section,

"At the same gross weight, airplane configuration, and power setting, a given airplane will consistently stall at the same indicated airspeed if no acceleration is involved. The airplane will, however, stall at a higher indicated airspeed when excessive maneuvering loads are imposed by steep turns, pull-ups, or other abrupt changes in its flight path. Stalls entered from such flight situations are called 'accelerated maneuver stalls,' a term, which has no reference to the airspeeds involved. Stalls which result from abrupt maneuvers tend to be more rapid, or severe, than the unaccelerated stalls, and because they occur at higher-than-normal airspeeds, and/or may occur at lower than anticipated pitch attitudes, they may be unexpected by an inexperienced pilot. Failure to take immediate steps toward recovery when an accelerated stall occurs may result in a complete loss of flight control, notably, power-on spins."

Administrative Information

Investigator In Charge (IIC):	Plagens, Howard
Additional Participating Persons:	Rod Avery; FAA FSDO; Riverside, CA Mark Platt; Lycoming Engines; Williamsport, PA
Original Publish Date:	July 30, 2015
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=87866

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](#).