# Aviation Investigation Final Report

| | | | |
|---|---|---|---|
| **Location:** | Alamogordo, New Mexico | **Accident Number:** | DEN07FA022 |
| **Date & Time:** | November 8, 2006, 12:45 Local | **Registration:** | N2500S |
| **Aircraft:** | Cessna 337C | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | | **Injuries:** | 1 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

A witness to the accident said the airplane touched down on runway 21, then suddenly veered to the right. It went off the runway, crossed the median and parallel taxiway, across the parking ramp, and collided with a hangar "at a high rate of speed." A sign, a pickup truck parked outside, and an airplane inside the hangar were also damaged. After the collision, the rear engine continued to run at full power. The witness drove to the accident site and tried to gain access to the cockpit from outside the airplane in an attempt to shut the engine down. When this failed, he went inside the hangar, and tried to reach inside the cockpit. The engine quit running shortly thereafter. Another witness said he heard the airplane's engines running at "full throttle" and saw the airplane "hopping and fishtailing" across the ground. When he arrived at the accident site, the rear propeller was striking a blue-colored pickup truck parked next to the hangar, and oil was "spraying everywhere." The engine eventually shut down, and the propeller moved to the feathered position. The airplane was pulled from the hangar and examined. No discrepancies were noted with the steering and brake systems. According to the pilot's autopsy report, the pathologist found "focal, severe hardening (atherosclerosis) of the aorta within the abdomen. The heart showed changes (fibrosis) consistent with a previous ischemic episode (heart attack)." The pathologist opined, "Given the severity of hardening of the coronary arteries of the heart, it is possible that the decedent was in the early stages of a heart attack (coronary artery insufficiency). Changes of ischemia (impaired blood flow) in the heart muscle often take hours to become evident under the microscope; therefore, the decedent may have experienced some decrease blood flow to the heart without microscopic evidence at autopsy. Decreased blood flow due to coronary insufficiency can cause irregular heartbeat and/or unconsciousness rapidly." Toxicology protocol was performed by FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma. According to their report, diltiazem was present in the blood and liver. According to the Kaiser Permanente Drug Encyclopedia, diltiazem is a calcium channel blocker, and is used to treat high blood pressure (hypertension) and chest pain (angina). It may also be used to treat an irregular heartbeat.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's incapacitation due to a heart attack while landing, which resulted in a loss of control and an on ground collision with objects.

### Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: LANDING

Findings
1. (C) AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND
2. (C) INCAPACITATION(CARDIOVASCULAR) - PILOT IN COMMAND
---

Occurrence #2: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING

Findings
3. OBJECT - VEHICLE
4. OBJECT - HANGAR/AIRPORT BUILDING

## Factual Information

HISTORY OF FLIGHT

On November 8, 2006, approximately 1245 mountain standard time, a Cessna 337C, N2500S, piloted by a commercial pilot, was destroyed when it departed runway 21 at Alamogordo-White Sands Regional Airport (ALM), Alamogordo, New Mexico, and collided with a hangar during its landing roll. Visual meteorological conditions (VMC) prevailed at the time of the accident. The personal flight was being conducted under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91, and an instrument flight rules (IFR) flight plan had been filed. The pilot, the sole occupant aboard, was fatally injured. The cross-country flight originated at Spinks Airport (FWS), Fort Worth, Texas at 1005 central standard time, and was en route to ALM.

At 0747 central standard time, the pilot telephoned the Fort Worth Automated Flight Service Station (AFSS) and requested a standard weather briefing for a proposed IFR flight from FWS to ALM. The pilot was advised that VMC prevailed along his route, and were forecast to remain the same. He was given the winds aloft forecast and current NOTAMs (Notices to Airmen). The pilot then filed an IFR flight plan, indicating the airplane was equipped with a 4096 code transponder with "/A" capability. His true airspeed would be 160 knots, and he would depart Fort Worth-Spinks at 1630 Zulu (1030 cst). His initial requested cruising altitude was 8,000 feet, and his route of flight would be "Kingdom Five, Millsap transition, to Millsap, then Victor 94 to Wink, then to Salt Flat, to Newman, and then Newman direct to Boles." Estimated time en route was 3 hours, 50 minutes, and he indicated there was 6 hours of fuel on board.

According to his wife, the pilot was en route to Holloman Air Force Base, New Mexico, to attend the 49th Fighter Group reunion.

According to FAA documents, the airplane departed FWS at 1006. The flight proceeded uneventfully and at 1246, as the airplane neared Alamogordo, the pilot cancelled his IFR flight plan but remained on the air traffic control center frequency for flight following services.

A witness to the accident, an airport employee who was working at the airport fire station, said the airplane touched down on runway 21 then suddenly veered to the right. It went off the runway, crossed the median and parallel taxiway, went across the parking ramp, and collided with a hangar "at a high rate of speed." A sign, a pickup truck parked outside, and an airplane inside the hangar were also damaged. There was no fire. After the collision, the rear engine continued to run at full power. The witness drove to the accident site and tried to gain access to the cockpit from outside the airplane in an attempt to shut the engine down. When this failed, he went inside the hangar and tried to reach inside the cockpit. The engine quit running

shortly thereafter.

Another witness, an employee of Ed's Flying Service, the airport's fixed base operator (FBO), said he heard the airplane's engines running at "full throttle" and saw the airplane "hopping and fishtailing" across the ground. When he arrived at the accident site, the rear propeller was striking a blue-colored pickup truck parked next to the hangar. Oil was "spraying everywhere." The engine eventually shut down and the propeller moved to the feathered position.

PERSONNEL (CREW) INFORMATION

The pilot, age 71, had the following certificates and ratings:

Private: September 15, 1955
Commercial: May 21, 1959
Instrument: May 21, 1959
Multiengine: August 21, 1962
Mechanic, Airframe & Powerplant: December 6, 1980.

His second class airman medical certificate, dated December 27, 2005, contained the restriction, "Must have available glasses for near vision."

The pilot's logbook #4 was found at his home and was submitted for review. It contained entries from May 11, 1986, to September 15, 2005. Logbook #5 was found in the wreckage. It contained entries from September 30, 2005, to November 1, 2006. Together, these logbooks indicated the pilot had accrued the following civilian flight time:

Total time: 1,759:40
Airplane multiengine land: 352:50
Cessna 337: 1:20 (exclusive of accident flight)
Airplane single-engine land: 1,415:00
Simulated instruments: 257:00
Actual instruments: 281:25
Night: 221:00

There were no Cessna 337 flights logged in logbook #4. Logbook #5 indicated the pilot first flew Cessna 337C, N2500C, on September 14, 2006, and received a biennial flight review on that date. The flight time was 1 hour. The pilot flew the airplane again on November 1, 2006, for 20 minutes. The accident flight was the pilot's third flight in the airplane.

The pilot was a retired United States Air Force lieutenant colonel. According to the Miltary Personnel Records Center in St. Louis, Missouri, he had served in the USAF from August 18, 1957, to October 11, 1977. According to their records, he had logged 3,912.7 military flight hours, of which 219.8 hours were accrued in the Cessna O-2, the military's version of the

Cessna 337. The hours were acquired, flying missions in Vietnam. His military and civilian flying hours were:

Total time: 5,672:22
Cessna 337 (O-2): 221:08

During his Air Force career, he was awarded the following decorations:

Distinguished Flying Cross
Air Medal with 2 silver stars
Air Force Commendation Medal with 1oak leaf cluster
Air Force Longevity Service Award Ribbon with 4 oak leaf clusters
Air Force Outstanding Unit Award
Presidential Unit Citation
National Defense Service Medal
Vietnam Service Medal with 3 bronze service stars
Armed Forces Expeditionary Medal
Republic of Viet Nam Campaign Medal
Small Arms Expert Marksmanship Ribbon

## AIRCRAFT INFORMATION

N2500C (s/n 337-0800), a model 337C, was manufactured by the Cessna Aircraft Company in 1967. It was equipped with two Continental IO-360-C fuel-injected engines, each rated at 210 horsepower, driving two McCauley 2-blade, all-metal, constant speed, full-feathering propellers.

A review of the airplane maintenance records revealed the last annual and 100-hour inspections were performed on the airframe, engines, and propellers on September 1, 2006, at a tachometer time of 773.4 hours. Total airframe time was 1,590.4 and total engine time-in-service was 1,583.7 hours. The rear engine was overhauled on March 27, 1970, at a total time of 515.1 hours. There was no record of the front engine being overhauled. The rear propeller has overhauled on June 19, 1990. No total or tachometer times were given. There was no record of the front propeller being overhauled.

## METEOROLOGICAL INFORMATION

The following weather observations were recorded by the ALM AWOS (Automated Weather Observation System):

1211: AUTO Wind, 280 degrees at 6 knots; visibility, 10 statute miles; temperature, 26 degrees Celsius; dew point, 7 degrees Celsius; altimeter, 29.93 inches of Mercury. A01.

1231: AUTO Wind, 320 degrees at 3 knots; visibility, 10 statute miles; temperature, 26 degrees Celsius; dew point, 6 degrees Celsius; altimeter, 29.92 inches of Mercury. A01.

1251: Wind, 320 degrees at 3 knots; visibility, 10 statute miles; temperature, 26 degrees Celsius; dew point, 6 degrees Celsius; altimeter, 29.91 inches of Mercury. A01.

## AERODROME INFORMATION

Alamogordo-White Sands Regional Airport (ALM), located 4 miles southwest of the city, is situated at an elevation of 4,200 feet msl. The main runway, 03-21, is made of asphalt and is 7,006 feet long and 150 feet wide. It had a porous friction coarse overlay (pfc). Holloman Air Force Base (HMN), located 10 miles west of the city, handles radar arrivals and departures for ALM.

## WRECKAGE AND IMPACT INFORMATION

GPS (Global Positioning System) coordinates were taken at various points along the runway and the path leading to the airplane. These coordinates were plotted on an airport diagram and an aerial photograph (see EXHIBITS). Tire marks were noted departing the runway centerline (O) and extending to the runway edge (N), a distance of 391 feet. The airplane departed the right side of the runway about a 45-degree angle approximately the 1,500-foot mark and went across the median (M-N), a distance of 344 feet. It went across the parallel taxiway (L-M) for 120 feet, then across a dirt area (K-L) for 210 feet. The airplane then crossed the airplane parking ramp (J-K), a distance of 315 feet, and collided with a parked pickup truck (I) and the hangar (H). Total distance traveled from the runway centerline to the hangar was 1,580 feet.

The airplane was pulled from the hangar and examined. No discrepancies were noted with the steering and brake systems. The pilot's flight bag was found on the floor in front of the right front seat. It was not jammed against the rudder pedals.

## MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy (2006-05308) was performed by the New Mexico Medical Examiner's Office in Albuquerque. According to the report, the pathologist found "focal, severe hardening (atherosclerosis) of the aorta within the abdomen. The heart showed changes (fibrosis) consistent with a previous ischemic episode (heart attack)." The pathologist opined, "Given the severity of hardening of the coronary arteries of the heart, it is possible that the decedent was in the early stages of a heart attack (coronary artery insufficiency). Changes of ischemia (impaired blood flow) in the heart muscle often take hours to become evident under the microscope; therefore, the decedent may have experienced some decrease blood flow to the

heart without microscopic evidence at autopsy. Decreased blood flow due to coronary insufficiency can cause irregular heartbeat and/or unconsciousness rapidly."

Toxicology protocol was performed by FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma. According to CAMI's report (#200600270001), no carbon monoxide or cyanide was present in blood, and no ethanol was present in vitreous. However, diltiazem was present in the blood and liver. According to the Kaiser Permanente Drug Encyclopedia, diltiazem is a calcium channel blocker, and is used to treat high blood pressure (hypertension) and chest pain (angina). It may also be used to treat irregular heartbeat.

ADDITIONAL INFORMATION

In addition to the Federal Aviation Administration, the only other designated party to the investigation was the Cessna Aircraft Company.

The wreckage was released to the insurance company on November 10, 2006.

## Pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Commercial; Military | **Age:** | 71,Male |
| **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:** | |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | December 1, 2005 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 1760 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

| | | | |
|---|---|---|---|
| **Aircraft Make:** | Cessna | **Registration:** | N2500S |
| **Model/Series:** | 337C | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | |
| **Date/Type of Last Inspection:** | | **Certified Max Gross Wt.:** | |
| **Time Since Last Inspection:** | | **Engines:** | 2 Reciprocating |
| **Airframe Total Time:** | | **Engine Manufacturer:** | Continental |
| **ELT:** | | **Engine Model/Series:** | TSIO-360A/B |
| **Registered Owner:** | | **Rated Power:** | 210 Horsepower |
| **Operator:** | Thomas E. Cross, Sr. | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

| | | | |
|---|---|---|---|
| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | ALM | **Distance from Accident Site:** | |
| **Observation Time:** | 12:51 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 3 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 320° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29.9 inches Hg | **Temperature/Dew Point:** | 27°C / 6°C |
| **Precipitation and Obscuration:** | | | |
| **Departure Point:** | Fort Worth, TX (FWS ) | **Type of Flight Plan Filed:** | IFR |
| **Destination:** | Alamogordo, NM (ALM ) | **Type of Clearance:** | |
| **Departure Time:** | 10:00 Local | **Type of Airspace:** | |

## Airport Information

| | | | |
|---|---|---|---|
| **Airport:** | ALAMOGORDO-WHITE SANDS REGIONA ALM | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 21 | **IFR Approach:** | |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Traffic pattern |

## Wreckage and Impact Information

| | | | |
|---|---|---|---|
| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | | **Aircraft Fire:** | |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | |
| **Total Injuries:** | 1 Fatal | **Latitude, Longitude:** | 32.84,-105.990554 |

## Administrative Information

| | |
|---|---|
| **Investigator In Charge (IIC):** | Scott, Arnold |
| **Additional Participating Persons:** | Kenneth D Hand; Albuquerque, New Mexico |
| **Original Publish Date:** | July 25, 2007 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | The NTSB traveled to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=64855 |